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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,203	06/28/2004	Peter Zoller	M17-0ZUSI	5207
36522 7590 05/18/2007 MAGIQ TECHNOLOGIES, INC 171 MADISON AVENUE, SUITE 1300 NEW YORK, NY 10016-5110			EXAMINER ZHANG, YUANDA	
			ART UNIT 2828	PAPER NUMBER
			MAIL DATE 05/18/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/500,203	Applicant(s) ZOLLER ET AL.	
	Examiner Yuanda Zhang	Art Unit 2828	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 June 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3, 5, 6, 9-13 and 15-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 5, 6, 9-13, 16, 18, 19 and 25 is/are rejected.
- 7) ☒ Claim(s) 2, 3, 15, 17, 20-24, and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/2804</u> .   | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Election/Restrictions***

1. Claims 4, 7-8, 14, and 25-57 are canceled. Claims 1-3, 5-6, 9-13, and 15-24 are pending and present for examination.

***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on 06/28/04 is being considered by the examiner.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 5, 6, 9-10, 16, 18, 19, 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Duan et al ("Quantum Communication between Atomic Ensembles Using Coherent Light", The American Physical Society, Vol. 85, No. 26, December 25, 2000).

5. In re claims 1, 5, and 25, with reference to figure 2, Duan et al disclose a method of creating entanglement between first and second atomic ensembles, comprising:

- Propagating a first pulse of light (polarized in one direction) generated in said pulsed source of light (a laser) into the first atomic ensemble (Sample 1) having a first collective excitation state, wherein photons in said first pulse of light have an

energy that can excite the first atomic ensemble to the said first collective excitation state so as to generate first photons (see figure 2);

- Propagating a second pulse of light (polarized in another direction) generated in said pulsed source of light (a laser) into the second atomic ensemble (Sample 2) having a second collective excitation state, wherein photons in said second pulse of light have an energy that can excite the second atomic ensemble to the said second collective excitation state so as to generate second photons (see figure 2);
- Interfering the first and second photons at a polarized beam splitter (PBS);
- Detecting (D) the interfered photons so as to establish entanglement between the first and second atomic ensembles (P 5643-5644).

6. In re claim 6, Duan et al disclose forming each atomic ensemble from one of solid matter, gaseous matter, and liquid matter (inherent because atomic ensemble has to one of the above matters by general law of Physics).

7. In re claim 9, Duan et al disclose generating the first and second photons involves a Stoke process (P 5643, involving a Stokes operator).

8. In re claim 10, Duan et al disclose the first and second atomic ensembles have substantially identical collective excitation energies (see figure 2, same pump source with different polarizations).

9. In re claim 16, Duan et al disclose generating the first and second light pulses with a laser (P 5643, "strong coherent light (light from an ordinary laser)").

10. In re claim 18, Duan et al disclose said first and second ensembles contain only atoms (inherent, atomic ensembles).

11. In re claim 19, Duan et al disclose generating first and second light pulses when one of two single photon detectors detects a photon (see figure 2).

***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duan et al ("Quantum Communication between Atomic Ensembles Using Coherent Light", The American Physical Society, Vol. 85, No. 26, December 25, 2000).

14. In re claims 11-12, Duan et al have disclosed the claimed invention above except said first and second atomic ensembles comprise Alkali and Cesium atoms.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Alkali and Cesium atoms as said first and second atomic ensembles, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

15. In re claim 13, Duan et al have disclosed the claimed invention above except each one of the first and second atomic ensembles has a density of between 1 and 100 atoms per cubic micron.

16. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the density of the atomic ensembles of Duan et al with a range of 1 and 100 atoms per cubic micron, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233 MPEP 2144.05 (II-A)

#### ***Allowable Subject Matter***

17. Claims 2-3, 15, 17, 20-24, and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

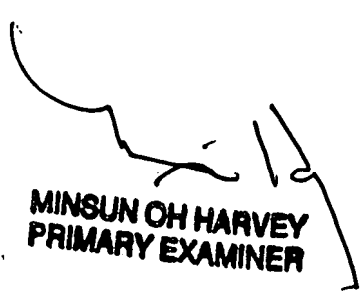
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yuanda Zhang whose telephone number is 571-270-1439. The examiner can normally be reached on Monday-Thursday, Alternating Fri 8:30am-6:00p EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

YZ  
05/03/07

  
**MINSUN OH HARVEY  
PRIMARY EXAMINER**